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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/787,164 | 02/27/2004 | Takanori Teshima | 01-279-CON | 4896 |
| 23400 | 7590 | 11/22/2004 | EXAMINER | |
| POSZ & BETHARDS, PLC 11250 ROGER BACON DRIVE SUITE 10 RESTON, VA 20190 | | | WILLIAMS, ALEXANDER O | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2826 | |

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/787,164

Applicant(s)

TESHIMA, TAKANORI

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 10/127613.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Serial Number: 10/787164 Attorney's Docket #: 01-279-CON
Filing Date: 2/27/04; claimed foreign priority to 4/25/2001

Applicant: Teshima

Examiner: Alexander Williams

This is a continuation of serial # 10/127613, filed 4/23/02.

Applicant's Amendment filed 8/26/04 has been acknowledged.

The disclosure is objected to because of the following informalities: The continuation application information should be updated.

Appropriate correction is required.

Claims 4 to 6 and 10 to 16 have been canceled.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claim 1 to 3, 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumamo Shoji (Japan Patent Application # 58-34951).

For example, in claim 1, Kumamo Shoji (figures 1 to 12) specifically figure 8 show a semiconductor device comprising: a semiconductor chip **12**, which produces heat when operated; a heat conducting plate **13,14** for conducting heat provided on one side of the semiconductor chip; an insulating sheet **(being that a mold retainers are made of an insulating material in which can be a insulating sheet 18,21)**, which is compressive is deformable also provided on the one side of the semiconductor chip; and a resin molding **16** covering the semiconductor chip, the plate, and the sheet such that the sheet is exposed **(outer surfaces of 18,21)** from the resin molding.

2. The semiconductor device of claim 1, Kumamo Shoji show wherein the heat conductivity of the insulating sheet is greater than that if the resin molding **(inherit, since the same materials are used)**.

3. The semiconductor device of claim 2, Kumamo Shoji show wherein the insulating sheet is made of silicone rubber.

7. The semiconductor device of claim 1, Kumamo Shoji show wherein the insulating sheet **(inside under end portions of 18,21)** is adhered to the heat conducting plate **(outer side portions of 13,14)** using a coating resin **16** applied to heat conducting plate.

9. The semiconductor device of claim 1, Kumamo Shoji show wherein the semiconductor chip forms part of a stack, and the stack includes the plate, and opposite sides of the semiconductor chip are soldered **(by 12a,12b)** to members of the stack (see figure 4).

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kumamo Shoji (Japan Patent Application # 58-34951) in view of Eguchi et al. (U.S. Patent # 6,627,997 B1).

Kumamo Shoji show the features of the claimed invention as detailed above, but fail to explicitly show wherein the coating resin is polyamide resin. However, Kumamo Shoji does disclose a sealing resin. It is understood that one of ordinary skill in the art known that a sealing resin can be a polyamide resin.

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Eguchi et al. is cited for showing a semiconductor module. Specifically, Eguchi et al. (figures 1A to 11E) specifically figure 10E discloses **the coating resin is polyamide resin** for the purpose of attaining high density mounting, narrow pitch/multi-pin connection, low noise, and low heat resistance.

Summary of Invention Paragraph - BSTX (33):

[0030] As thermoplastic resins there may be used polyimide or polyamide resins for example.

Detail Description Paragraph - DETX (45):

[0094] Using a mixture (weight ratio 1:1) of a thermoplastic polyimide and a thermoplastic polyamide-imide as the resin composition 5 a semiconductor module

was fabricated in accordance with the method illustrated in FIGS. 10A to 10G.

Therefore, it would have been obvious to one of ordinary skill in the art to use Eguchi et al.'s polyamide coating resin to modify Inoue's sealing resin for the purpose of attaining high density mounting, narrow pitch/multi-pin connection, low noise, and low heat resistance.

Response

Applicant's arguments filed 8/26/04 have been fully considered, but are moot in view of the new grounds of rejections detailed above.

The listed references are cited as of interest to this application, but not applied at this time.

| Field of Search | Date |
|--|--------------------|
| U.S. Class and subclass: 257/718,712,713,675,777,723,685,686,707,720,717,787, 790,788,791,792,795,796,684 | 6/9/04 11/16/04 |
| Other Documentation: foreign patents and literature in 257/718,712,713,675,777,723,685,686,707,720,717,787, 790,788,791,792,795,796,684 | 6/9/04 11/16/04 |
| Electronic data base(s): U.S. Patents EAST | 6/9/04 11/16/04 |

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone

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number is (571) 272 1924. The examiner can normally be reached on M-F 6:30-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AOW
11/17/04



Primary Examiner
Alexander O. Williams